

II B.Tech I Semester Regular Examinations, November 2006

BIO CHEMISTRY

(Bio-Technology)

Time: 3 hours

Max Marks: 80

**Answer any FIVE Questions
All Questions carry equal marks**

1. Describe the important monosaccharide and disaccharides of physiologic importance. Give their structural formulae with two example. [16]
2. (a) Describe the conversion of pyruvic acid to acetyl-CoA. How much energy is gained? at various steps?
(b) Describe the general sequence of events in the citric acid cycle. Which steps are oxidative? What is the Total input and output of the cycle? [16]
[16]
3. What is Oxidative phosphorylation? Write a note on the significance of the ADP-ATP high energy cycle. [16]
4. What do you mean by protein? Explain structure of protein. [16]
5. Discuss the nitrogen cycle indicating the involvement of different enzymes in it. Explain the role of nitrogen cycle in maintaining the pool of biologically available nitrogen. [16]
6. Write a detailed note on the hydrolysis of triacylglycerols mediated by c-AMP. [16]
7. 'Free energy is the most useful thermodynamic function in Biochemistry' Illustrate your answer with suitable metabolic pathway. [16]
8. Discuss the Calvin cycle in detail and add a note on the regulation of the Calvin cycle. [16]

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1. Give an account of the various polysaccharides found in animal and plant cells. Write a note on the biological significance of carbohydrates. [16]
2. What is Gluconeogenesis? Describe the major metabolic pathways involved in this process. Write a note on its regulation. [16]
3. What is Oxidative phosphorylation? Write a note on the significance of the ADP-ATP high energy cycle. [16]
4. (a) Discuss in detail Enzyme-catalyzed transamination.
(b) What is the role of pyridoxal phosphate in the conversion of α -amino groups to α -Ketoglutaride. [16]
5. Explain how ammonia is incorporated into biomolecules? Discuss the role of glutamate and glutamine in this process. [16]
6. (a) What are structural lipids? Give their structural characteristics.
(b) Which are the phospholipids that have ether-linked fatty acids. Give their structures and mention their physiological significance. [8+8]
7. Enumerate the different stages involved in the extraction of energy from food stuffs. Outline the major pathways involved in this process. [16]
8. (a) Comment on the diversity of photosynthetic organisms.
(b) What are the primary photosynthetic pigments? Briefly discuss their chemistry. [8+8]

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1. In what forms carbohydrates are stored in plants and animals. Give the structural Formulae for the constituents concerned and write a short note on it. [16]
2. (a) What do you mean by Glycolysis? Explain the phases of Glycolysis in short.
(b) Explain the fate of pyruvate under aerobic and anaerobic conditions. [16]
3. Describe the process of Electron-Transport system in the mitochondria. [16]
4. What do you mean by protein? Explain structure of protein. [16]
5. List out the branched chain amino acids indicating their structures and sketch the biosynthesis of any two of them. How are the pathways regulated? [16]
6. What are the salient structural features of Fluid Mosaic Model of biological membranes? What is the physiological role of membrane proteins? [16]
7. Enumerate the different stages involved in the extraction of energy from food stuffs. Outline the major pathways involved in this process. [16]
8. Explain how the dark reactions of photosynthesis have been elucidated. Discuss the pathway by which carbon dioxide is fixed into carbohydrate. [16]

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1. In what forms carbohydrates are stored in plants and animals. Give the structural Formulae for the constituents concerned and write a short note on it. [16]
2. What is Gluconeogenesis? Describe the major metabolic pathways involved in this process. Write a note on its regulation. [16]
3. Summarize the sequence of reaction involved in malate aspartate shuttle and glycerol phosphate? [16]
4. What do you mean by ammonotelic animals? Explain Urea cycle. [16]
5. Which one of the heterocyclic amino acids uses the precursors of purine biosynthesis. Sketch its biosynthesis and comment on its regulation. [16]
6. How long chain fatty acids are biosynthesized in an animal cell in the cytosol. What is the role of acyl carrier protein? [16]
7. What is glycolysis? Enumerate the enzyme catalyzed reactions of anaerobic degradation of glucose. Comment in the energetics and regulation of this pathway. [16]
8. Explain how the dark reactions of photosynthesis have been elucidated. Discuss the pathway by which carbon dioxide is fixed into carbohydrate. [16]
